Alcohol Legislation and its Effect on Severe Injuries on the North Slope Borough. Michael P. Keiffer, Class of 1994.

Abstract

Background. Injuries are the leading cause of death among Alaska Natives.[1] Data collected during this study suggest that alcohol is a contributing factor for many injuries. An attempt has been made by the North Slope Borough of Alaska to reduce alcohol consumption and alcohol-related problems by enacting local alcohol legislation. The following study was initiated to determine if alcohol legislation was effective in reducing the number of injury hospitalizations and alcohol-related deaths in the eight villages within the North Slope Borough.

Methods. A comparison was made of the number of injury hospitalizations that occurred before and after local alcohol legislation was enacted, to determine if the frequency of injury hospitalizations varied after legislation. Death data was collected for the years 1983 through 1994 in order to identify the number of alcohol-related injury deaths per year and to determine if alcohol-related injury deaths declined in the years following local alcohol legislation. Data was also used to identify race, gender, type of injury deaths, and blood alcohol levels. Comparisons were made of the number of alcohol-related calls received by the North Slope Borough Public Safety Office and the number of alcohol-related visits reported by the Barrow hospital to determine if the number of calls or visits was affected by alcohol legislation. Alcohol restrictions and effective dates for the eight villages were used as points of reference to make comparisons.

Results. Reductions occurred in the number of injury deaths and injury hospitalizations after alcohol legislation was passed. However, the effect that alcohol legislation had on the reduction of the injury hospitalizations is uncertain. A reduction was also evident in the number of alcohol-related calls received by the North Slope Borough Public Safety Office and in the number of alcohol-related visits reported by the Barrow hospital.

Conclusions The eight villages of the North Slope Borough experienced positive effects for non-injury related problems but the true effects local option laws had on injuries and injury related deaths are still unclear.

The State of Alaska gives local residents the power to govern the availability and use of alcohol within their own community. For instance, a community may choose to allow the sale of alcohol by municipal liquor stores, completely ban alcohol possession, or limit alcohol to personal use only. Residents can petition, if enough signatures are collected, to have alcohol legislation restrictions placed on a ballet in municipal or special elections at any time. In an effort to reduce the number of alcohol-related problems, each village within the North Slope Borough adopted its own alcohol legislation.

The North Slope Borough consists of eight Native villages located along the Arctic Sea at the northern tip of Alaska. The total area of this region is 94,887 square miles and accounts for 15% of the state's area. The eight Native villages located in this remote area are Barrow, Atqasuk, Anaktuvuk Pass, Kaktovik, Nuiqsut, Point Lay, Point Hope and Wainwright. According to the 1990 Census, the population in the North Slope Borough was 5,979;[2] approximately 58 percent reside in Barrow and 42 percent live in the seven remote outlying villages. Barrow is the largest of all the villages and is the regional center for business, communication, government, and transportation of the North Slope Borough. Barrow is located 330 miles above the Arctic Circle, 722 miles northwest of Anchorage, and 502 miles northwest of Fairbanks. Commercial airlines or charter aircraft provide transportation into Barrow, and the seven outlying villages are accessible from Barrow with aircraft or snowmachines. The isolation and limited access to the North Slope Borough presented an excellent opportunity to evaluate local alcohol legislation and its effects on alcohol-related injuries/deaths in these eight villages.

[1] Regional Differences in Indian Health. Department of Health and Human Services, Public Health Service and Indian Health Service, 1994.

[2] Alaska Department of Labor, State Data Center, July 1991

Methods

This study was conducted in the Alaska North Slope Borough and targeted Anatuvuk Pass, Atqasuk, Barrow, Kaktovik, Nuiqsut, Point Hope, Point Lay and Wainwright. Each of the eight villages adopted and enacted its own alcohol legislation between 1977 and 1994. Before 1977, these villages were "wet" meaning no alcohol restrictions were imposed. After 1977, each village either became "damp"(ban on sale and importation) or "dry"(ban on possession), except for Barrow that passed a ban on sale but not on importation or possession. Table 1 identifies each village's legislation and effective dates.

Table 1: Village local options and effective dates

Anaktuvuk Pass--Ban Sale and Importation,01-01-83	Anaktuvuk Pass--Ban Possession,01-01-87
Atqasuk--Ban Possession,01-01-94	Barrow--Ban Sale,11-01-77
Barrow--Ban Possession,11-01-94	Kaktovik--Ban Possession,11-05-89
Nuiqsut--Ban Sale and Importation,12-01-83	Nuiqsut--Ban Possession,12-01-86
Point Hope--Ban Sale and Importation,08-01-82	Point Hope--Ban Possession,11-01-89
Point Lay--Ban Sale and Importation,08-01-86	Wainwright--Ban Sale Importation,08-01-82
Source: Alaska Alcohol Beverage Control Board	

Injury hospitalization data originated from the Barrow Public Health Service Alaska Native Hospital. The data was retrieved by the hospital from the Indian Health Service's Patient Care Component (PCC) and the Resource and Patient Management System (RPMS). This system is designed to send an injury referral bulletin to an electronic mail file when a hospital discharge, due to injury, is requested by the PCC/RPMS system. The PCC/RPMS system documents the day of admission to the hospital and location of hospitalization but does not distinguish between alcohol-related or non-alcohol related injuries.

Injury hospitalization data was collected for all eight villages. A test group consisting of Point Hope, Nuiqsut, Point Lay, Wainwright and Anaktuvuk Pass were grouped together for comparison due to their legislation similarities and will be referred to as the test group. Between 1981-1989, each village in the test group, experienced "damp" legislation. In addition, Nuiqsut, Point Hope, and Anaktuvuk Pass changed their legislation from "damp" to "dry" during this same time period. For each test group village, yearly average rates per 1000 were calculated for the number of injury hospitalizations that occurred before and after the "damp" and "dry" legislation.

In order to calculate the yearly average rates, an allowance had to be made for the population growth between 1980 and 1990. A population growth rate was calculated for each village using the formula:

$$\frac{\text{1990 population - 1980 population}}{\text{11 years}} = \text{population growth rate\per year}$$

The population growth rate was added to each year between 1980 and 1990 to arrive at a calculated population per year. The following formula was used to calculate the yearly average rates per 1000:

$$\frac{\text{\# of injury hospitalizations per year}}{\text{calculated population}} \times 1000 = \text{yearly avg. rate per 1000}$$

The yearly average rates were then compared to each other to determine changes in the number of injury hospitalizations that occurred before and after the "damp" or "dry" legislation.

A control group consisting of Barrow, Kaktovik and Atqasuk was used for comparison against the test group which enacted local alcohol legislation. The three villages in the control group did not enact any alcohol legislation between 1981 and the end of 1989. For each of these three villages, yearly average rates per 1000 were calculated for injury hospitalizations that occurred between 1981-1989. The same method of calculation was used for both groups.

Death data from 1983 to 1994 was collected for all eight villages from police and autopsy reports from the North Slope Borough Public Safety Office. An account was taken on each death entry for race, gender, type of death, type of injury, date of injury, substance involvement, and blood alcohol level. The number of injury deaths that occurred before legislation was compared to the number after legislation to determine if local alcohol legislation was effective in either the "damp" or "dry" villages.

The North Slope Borough Public Safety Office also provided the number of alcohol-related calls it received from all eight villages in November of 1993 and November of 1994,to assess the impact of alcohol legislation. The Barrow PHS Alaska Native Hospital provided data on the number of alcohol-related visits reported by the hospital for the months of September through December of 1993 and 1994. The alcohol restrictions and effective dates for the eight villages were used as points of reference to make comparisons of data and to determine if any changes occurred in the number of alcohol-related injuries/deaths.

Results

Between 1982-1986, "damp" legislation was adopted by each village in the test group. Based on a yearly average rate, the number of injury hospitalizations that occurred in the test group prior to all "damp" legislation enacted was 32.4 per 1000. This figure decreased to 21.1 per 1000 after "damp" legislation, reducing the number of injury hospitalizations by 35% in the test group.

Between 1986-1989, 3 of the villages in the test group changed from "damp" to "dry". Prior to 1986, the rate of injury hospitalizations within these 3 villages was 19.1 per 1000. This rate decreased to 15.8, reducing the number of injury hospitalizations by 14%. The test group and the control group experienced different fluctuations in the number of injury hospitalizations that occurred between 1981-1989. The test group had not enacted any legislation prior to 1981, and the injury hospitalization rate was 22.4 per 1000 per year. Between 1981-1989 the test group enacted either "damp" or "dry" legislation, and by 1989, the injury hospitalization rate for the test group decreased to 13.5 per 1000 per year for a reduction of 40%.

The control group did not change alcohol legislation until after the end of 1989. In 1981, the control group's injury hospitalization rate was 52.7 per 1000 per year. By 1989, this decreased to 18.8, a 64% reduction. The control group's rate of injury hospitalizations declined much more than the test group's injury hospitalization rate. Since a greater reduction occurred in the control group where no legislation (except for Barrow's ban on sale) was present, the role, if any, that alcohol legislation played in the reduction of the test group's injury hospitalizations is unclear.

North Slope Borough data for 1983 to 1994 showed a total of 115 injury deaths. These deaths included 78 Native males, 24 Native females and 12 non-natives. Seventy-eight (68%) of the injury deaths were alcohol related with an average blood alcohol level (BAL) of 0.17, which exceeds Alaska's legal intoxication level of 0.1. The six leading causes of injury deaths listed in Table 2 accounted for 69% of the 115 injury deaths that occurred between 1983 and 1994.

Table 2: Six most frequent causes of injury deaths

INJURY	FREQ	%ETOH RELATED	AVG.BAL*
Suicide	27	81	.18
Acute Alcohol	15	100	.41
Assaults	15	86	.21
Exposure	9	67	.13
Drowned	7	57	.09
Fire	6	67	.01

**Average BAL was figured only using documented levels.*

Those villages that enacted "damp" legislation decreased their combined injury death rate per year from 4.33 to 1.13 for a 75% reduction. However, those villages that enacted "dry" legislation increased their injury death rate by 14% from 2.14 to 2.68.

Data collected from the North Slope Borough Public Safety Office suggest that Barrow's ban on possession has had some positive affect on alcohol-related problems in the North Slope Borough. The number of alcohol-related calls received by the Public Safety Office decreased in November of 1994 compared to the number of alcohol related calls reported in November of 1993, as shown in Table 3.

Table 3:

	NOVEMBER 1993 Before Legislation	**NOVEMBER 1994 After Legislation**	**% Reduction**
Total # of village calls (excluding Barrow)	175	103	41
# of substance abuse-related village calls	38	19	50
Intoxicated people removed from Barrow	63	18	71
# of people entered into detox programs	29	3	90

After Barrow passed its ban on possession, the number of alcohol-related visits reported by the Barrow hospital decreased. A total of 222 alcohol-related visits were reported in September and October of 1994, and this figure decreased to 37 visits in November and December of 1994 for an 83% reduction. When the number of alcohol-related visits reported in December of 1993 and 1994 are compared to each other, the number of reported visits decreased by 85%.

Conclusion: The North Slope Borough experienced some positive effects from alcohol legislation. Some reductions occurred in the number of injury deaths and injury hospitalizations after local alcohol legislation was passed. However, the role that alcohol legislation played in the reduction of injury hospitalizations is uncertain. After Barrow's ban on possession, an immediate decline occurred in the number of alcohol-related calls to the Public Safety Office and in the number of alcohol-related visits to the Barrow hospital. The "full" impact of Barrow's decision to ban alcohol possession is not yet known. A future study is needed to evaluate what effect Barrow's ban on possession will have on the North Slope Borough.